PRODUCT BROCHURE

HEXAGON METROLOGY

ROMER Absolute Arm

Portable Measuring Arms





ROMER ABSOLUTE ARM.
THE ALL-PURPOSE
METROLOGY TOOL.

THE ROMER ABSOLUTE ARM.

Absolutely Groundbreaking.

The ROMER Absolute Arm represents Hexagon Metrology's expertise in portable CMMs. Mobility, stability, low weight and high-performance laser scanning packages make it an all-purpose 3D measurement tool.

Absolute encoders, which assign an absolute value to each position of the arm, are a unique feature. Initialization is not necessary. Simply take the measuring arm to the part, switch it on and start measuring.

A hot tip for cool calculation

A ROMER portable measuring arm is a good investment. The time required to train users is minimal. Even inexperienced personnel will produce reliable measuring results in a short time due to the user-friendliness of the ROMER Absolute Arm. Inspection and control throughput is increased dramatically, and because the ROMER Absolute Arm helps to ensure quality, there is a fast return on investment. The ROMER Absolute Arm increases productivity and minimises off-spec production – in the long run and with absolute efficiency.

ROMER – absolutely portable CMMs.

ROMER ABSOLUTE ARM TOP FEATURES

Absolute encoders
Referencing and warm-up time was for yesterday – just switch the arm on and measure.

Measurement volume
Size does matter: The ROMER Absolute Arm is available in seven lengths between 1.5 m and 4.5 m.

SmartLock
If the ROMER Absolute Arm is not in use, lock it comfortably and safely. SmartLock also allows to fix the arm in any intermediate position.

Certification
All ROMER Absolute Arms including scanning systems pass through B89.4.22 certification. Additional certification according to VDI/VDE 2617-9 is available.

Feature packs
The ROMER Absolute Arm is ready for more.
Feature Packs extend the arm's functions the easy way. They enable battery operation, laser scanning and WiFi communication.

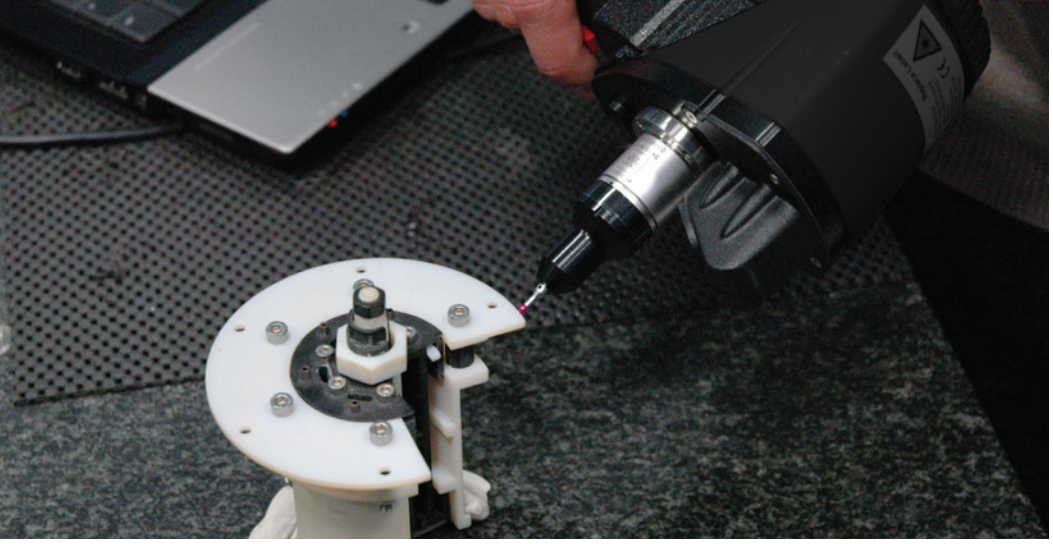




RDS
ROMER proprietary RDS software is the virtual double of the ROMER Absolute Arm. For high-speed accuracy checks, calibration and simple measurements.

Laser scanning
The ROMER Absolute Arm is available with a completely integrated high-performance laser scanner or the external laser scanner CMS108 for the most challenging scanning jobs.
It is also open for third party laser scanners.

Automated probe recognition
Switch between different probe types or between tactile probes and scanners any time. No re-calibration, no probe selection, no tools: The unique probe connection allows a quick and easy probe exchange.








ROMER









THE ROMER ABSOLUTE ARM EXPERIENCE

WHAT USERS THINK

"When you are standing in the middle of the fixture, the absolute encoders on the ROMER arm are superb, because you don't have to reference them."

Peter Haase, Bombardier
Bautzen, Germany

"We've been using portable measuring arms from ROMER for many years now. The ROMER Absolute Arm is a class of its own. Thanks to absolute encoders, the operation is much easier than before, we can measure faster and achieve accurate, reliable results at any time."

Marc Rohr, Liebherr Hydraulikbagger
Kirchdorf, Germany

"The reliability of the measurements with the ROMER Absolute Arm creates transparency in our relationship with our customers, who also benefit from the excellent quality of the photovoltaic backsheet foils."

Mario Egger, AT&S
Leoben, Austria

"With the ROMER Absolute Arm, we are now capable of CNC machining simple to complex 3D surface parts and cut our design time down by up to 80%. It is an extremely productive tool with almost limitless opportunities."

Donovan Barnes, Habitat Industries
Cape Town, South Africa

"Each inspection is different. We have never yet measured the same part twice! Working with the ROMER Absolute measuring arm is just great."

Jacky Pierre, TenCate
Primarette, France

INCREASING PRODUCTIVITY ACROSS ALL INDUSTRIES

Typical Industries:

- Automotive
- Aerospace
- General Industries
- Power Generation / Wind Energy
- Universities / Schools
- Medical Equipment
- Piping & Tubing
- Agriculture & Heavy Equipment
- Shipbuilding
- Railway
- Archaeological

Typical Measuring Applications:

- Sheet Metal Parts
- Dies & Molds / Tooling
- Machined Parts
- Jigs & Fixtures
- Crash Test
- Tubes & Tube Assembly
- CAD-to-Part comparison
- Alignment
- Reverse Engineering









User-friendly design and a wide range of accessories such as Feature Packs, stands and tripods or probes make the ROMER Absolute Arm a comfortable tool.

ACCURACY MADE EASY

Carbon fibre structure. Absolute operational safety with SpinGrip and a wrist with an incorporated mouse function. Illumination of the part and an integrated digital camera.
The ROMER Absolute Arm is an all-around balanced measuring instrument. It is the featherweight among the CMMs. Its operation is a matter of routine after a short time, even with one hand and in locations where traditional CMMs could never perform. SpinGrip and SpinKnob handles, infinite rotation of the principal axes and SmartLock complete the ROMER Absolute Arm's consequent user-friendliness. The sophisticated "Zero G" counter balance design lets the arm float in the user's hand.

AS INDIVIDUAL AS YOUR APPLICATION

Feature Packs

ROMER Feature Packs unfold the full potential of a portable measuring arm. These functional extensions are perfectly coordinated with the ROMER Absolute Arm and are part of an integrated system. They connect directly to the arm.

The ROMER Mobility Pack includes a battery and WiFi communication – maximum flexibility for the ROMER Absolute Arm.

The ROMER Scanning Pack is the interface for laser scanners.

The ROMER Wireless Scanning Pack for the integrated laser scanner makes high-speed 3D scanning completely wireless.

Accessories

Different probes, tripods and stands for different applications: All ROMER Absolute Arms are ready for a multitude of environments. Hundreds of accessories are available à la carte.



ROMER ABSOLUTE ARM WITH SIX MOVEMENT AXES

The ROMER Absolute Arm with six rotational axes is designed for highly accurate tactile measurements on countless work pieces. The six axis ROMER Absolute Arm allows reliable part inspection on features of sheet metal parts, plastic components or carbon fibre structures. In case your measurement jobs require laser scanning later, an upgrade is possible at any time.



ROMER ABSOLUTE ARM WITH INTEGRATED LASER SCANNER

Freedom of movement: with a fully integrated and certified laser scanner system, this is an all-purpose metrology system for a multitude of applications. 3D digitizing, 3D modelling, point cloud inspection, reverse engineering, rapid prototyping or copy milling are the most frequent laser scanner applications. The laser scanner is tuned for a vast variety of materials without compromise in accuracy. ROMER's integrated laser scanner does not need warm-up time or additional cables and controllers. Changing from scanning to probing and vice versa is possible at any time.



ROMER ABSOLUTE ARM WITH EXTERNAL LASER SCANNER

The ROMER Absolute Arm with external scanner is a modular high-end laser scanning platform designed for the CMS108 from Hexagon Metrology. With CMS108, the ROMER Absolute Arm offers first-class performance even on complex surfaces and on work pieces made up of the most challenging material types. Teaching of the material is not required: the automatic laser power control of the CMS108 automatically adapts to the surface conditions. CMS108 is the first ever laser scanner with a zoom function which provides three different line widths. Third party scanners can also be connected.



ROMER TUBE INSPECTION SOLUTION

The ROMER Tube Inspection Solution represents a unified system covering all 3 main tasks of tube measurement: Tube inspection and definition, geometry measurement and bender interfacing with on-line bending program correction. The ROMER system is the only portable tube inspection solution on the market. It can be taken to the work piece to measure pipes, lines, hoses and tubes in situ, thereby saving time and effort. Reverse engineering tube geometry for replacement parts is fast and straightforward, even on the assembly without removing the tube.

ROMER ABSOLUTE ARM. SPECIFICATIONS.

6-Axis Probing Specifications

	Model	Measuring range	Point repeatability[1]	Volumetric accuracy[2]	Arm weights
73 series	7315	1.5 m / 4.9 ft.	0.025 mm / 0.0010 in.	± 0.037 mm / 0.0015 in.	7.1 kg / 15.6 lbs
	7320	2.0 m / 6.6 ft.	0.030 mm / 0.0012 in.	± 0.042 mm / 0.0017 in.	7.4 kg / 16.3 lbs
	7325	2.5 m / 8.2 ft.	0.038 mm / 0.0015 in.	± 0.051 mm / 0.0020 in.	7.7 kg / 17.0 lbs
	7330	3.0 m / 9.8 ft.	0.059 mm / 0.0023 in.	± 0.075 mm / 0.0030 in.	8.0 kg / 17.6 lbs
	7335	3.5 m / 11.5 ft.	0.079 mm / 0.0031 in.	± 0.100 mm / 0.0039 in.	8.3 kg / 18.3 lbs
	7340	4.0 m / 13.1 ft.	0.099 mm / 0.0039 in.	± 0.125 mm / 0.0049 in.	8.6 kg / 19.0 lbs
	7345	4.5 m / 14.8 ft.	0.120 mm / 0.0047 in.	± 0.150 mm / 0.0059 in.	8.9 kg / 19.6 lbs
75 series	7520	2.0 m / 6.6 ft.	0.016 mm / 0.0006 in.	± 0.023 mm / 0.0009 in.	7.7 kg / 17.0 lbs
	7525	2.5 m / 8.2 ft.	0.020 mm / 0.0008 in.	± 0.029 mm / 0.0011 in.	8.0 kg / 17.6 lbs
	7530	3.0 m / 9.8 ft.	0.030 mm / 0.0012 in.	± 0.044 mm / 0.0017 in.	8.3 kg / 18.3 lbs
	7535	3.5 m / 11.5 ft.	0.040 mm / 0.0016 in.	± 0.0.057 mm / 0.0022 in.	8.6 kg / 19.0 lbs
	7540	4.0 m / 13.1 ft.	0.055 mm / 0.0022 in.	± 0.069 mm / 0.0027 in.	8.9 kg / 19.6 lbs
	7545	4.5 m / 14.8 ft.	0.070 mm / 0.0028 in.	± 0.082 mm / 0.0032 in.	9.2 kg / 20.3 lbs

All specifications according to B89.4.22 and VDI/VDE 2617-9.

[1] The **Point Repeatability Test** is the reference test to determine measurement arm repeatability with ball probe. The cone is in front of the machine. Points are measured from multiple approach directions. The average point and the deviation of each point to the average center are calculated. The result is the maximum range divided by two.

[2] The **Volumetric Accuracy Test** most accurately represents the reasonable expectations for machine performance in practical measuring applications since it involves measuring a certified length standard many times in several locations and orientations and compares the resultant measurements to the actual length. The Volumetric Length Accuracy Test is the most appropriate test for determining machine accuracy and repeatability. The result is the maximum deviation of the measuring distance less the theoretical length.

Ambient conditions

Working temperature:	0°C – 50°C (32°F – 122°F)
Storage temperature:	-30° – 70° C (-22°F – 158°F)
Relative humidity:	10% – 90% non-condensing
Operational elevation:	0 – 2000 m (0 – 6600 ft)

Marks of conformity

CE Compliance:	Yes

Power requirement

Universal worldwide voltage	110V – 240V

7-Axis Probing and Scanning Specifications

	Model	Measuring range	Probing point repeatability[1]	Probing volumetric accuracy[2]	Scanning system accuracy SI[4] (with RS1)	Scanning system accuracy SE[4] (with CMS108)	Arm weights SI	Arm weights SE
73 series	7320SI/SE	2.0 m / 6.6 ft.	0.044 mm 0.0017 in.	± 0.061 mm 0.0024 in.	0.079 mm 0.0031 in.	0.075 mm 0.0030 in.	8.3 kg 18.3 lbs	7.9 kg 17.4 lbs
	7325SI/SE	2.5 m / 8.2 ft.	0.049 mm 0.0019 in.	± 0.069 mm 0.0027 in.	0.084 mm 0.0033 in.	0.080 mm 0.0031 in.	8.6 kg 19.0 lbs	8.2 kg 18.1 lbs
	7330SI/SE	3.0 m / 9.8 ft.	0.079 mm 0.0031 in.	± 0.100 mm 0.0039 in.	0.119 mm 0.0047 in.	0.113 mm 0.0044 in.	8.9 kg 19.6 lbs	8.5 kg 18.7 lbs
	7335SI/SE	3.5 m / 11.5 ft.	0.099 mm 0.0039 in.	± 0.125 mm 0.0049 in.	0.147 mm 0.0058 in.	0.140 mm 0.0055 in.	9.2 kg 20.3 lbs	8.8 kg 19.4 lbs
	7340SI/SE	4.0 m / 13.1 ft.	0.115 mm 0.0045 in.	± 0.151 mm 0.0059 in.	0.181 mm 0.0071 in.	0.172 mm 0.0068 in.	9.5 kg 20.9 lbs	9.1 kg 20.1 lbs
	7345SI/SE	4.5 m / 14.8 ft.	0.141 mm 0.0056 in.	± 0.179 mm 0.0070 in.	0.214 mm 0.0084 in.	0.203 mm 0.0080 in.	9.8 kg 21.6 lbs	9.4 kg 20.7 lbs
75 series	7520SI/SE	2.0 m / 6.6 ft.	0.023 mm 0.0009 in.	± 0.033 mm 0.0013 in.	0.058 mm 0.0023 in.	0.053 mm 0.0021 in.	8.6 kg 19.0 lbs	8.2 kg 18.1 lbs
	7525SI/SE	2.5 m / 8.2 ft.	0.027 mm 0.0011 in.	± 0.038 mm 0.0015 in.	0.063 mm 0.0025 in.	0.058 mm 0.0023 in.	8.9 kg 19.6 lbs	8.5 kg 18.7 lbs
	7530SI/SE	3.0 m / 9.8 ft.	0.042 mm 0.0017 in.	± 0.058 mm 0.0023 in.	0.083 mm 0.0033 in.	0.078 mm 0.0031 in.	9.2 kg 20.3 lbs	8.8 kg 19.4 lbs
	7535SI/SE	3.5 m / 11.5 ft.	0.055 mm 0.0022 in.	± 0.081 mm 0.0032 in.	0.101 mm 0.0040 in.	0.096 mm 0.0038 in.	9.5 kg 20.9 lbs	9.1 kg 20.1 lbs
	7540SI/SE	4.0 m 13.1 ft.	0.067 mm 0.0026 in.	± 0.098 mm 0.0039 in.	0.119 mm 0.0047 in.	0.114 mm 0.0045 in.	9.8 kg 21.6 lbs	9.4 kg 20.7 lbs
	7545SI/SE	4.5 m 14.8 ft.	0.084 mm 0.0033 in.	± 0.119 mm 0.0047 in.	0.138 mm 0.0054 in.	0.133 mm 0.0052 in.	10.1 kg 22.3 lbs	9.7 kg 21.4 lbs

All specifications in relation to B89.4.22.

[3] **SI** designates the ROMER Absolute Arm with integrated scanner, **SE** designates the ROMER Absolute Arm with external scanner.

[4] **The Scanning System Accuracy Test** most accurately represents the reasonable expectations for machine performance in practical measuring applications while using the laser scanning method. The test consists of measuring a matte grey sphere with 5 different arm articulations. In each articulation of the arm the sphere is scanned from 5 different directions such that the majority of the sphere is scanned. The result is the maximum 3D center to center distance of the 5 spheres.

All probing specifications are achieved with a ROMER Absolute Arm mounted on a ROMER base plate or magnetic base and using a 15 mm steel ball probe with a length of 50 mm under stable environmental conditions. All CMS108 scanning specifications are achieved with a ROMER Absolute Arm mounted on a ROMER base plate or magnetic base and using CMS108 zoom setting 2A (mid range scan width 60mm and point spacing 0.03 mm) and a matte grey calibration sphere 25.4mm diameter under stable environmental conditions.

All RS2 scanning specifications are achieved with a ROMER Absolute Arm mounted on a ROMER base plate or magnetic base and a matte grey calibration sphere of 25.4 mm diameter under stable environmental conditions.

ROMER Absolute Arm. Laser scanners.

		Integrated scanner RS2	External scanner Hexagon CMS108
Scanning sensor specification	Max. point acquisition rate	50'000 Points/s	30'000 Points/s
	Points per Line	1000	max. 2000
	Line rate	50 Hz	max. 53 Hz
	Line width (mid range)	65 mm	124 mm / 60 mm / 25 mm
	Stand off (mid range)	150 mm ± 50 mm	180 mm ± 40 mm
	Minimum point spacing (mid range)	0.046 mm	0.025 mm
	Laser power control	Semi-automatic – per line	Fully automatic – per point
	Accuracy (2 sigma)[5]	30 µm	20 µm
	Weight	340 g	398 g
	Controller	No	Yes
	Laser safety	Class 2M	Class 2
	Working temperature	5°C – 40°C (41°F – 104°F)	10°C – 42°C (50°F – 108°F)









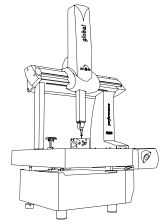
THE CHOICE IS YOURS.



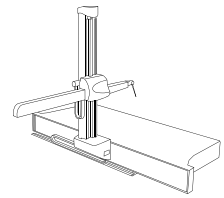
LASER TRACKERS
& STATIONS



PORTABLE MEASURING ARMS



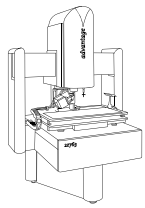
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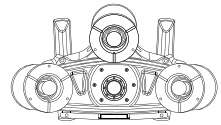
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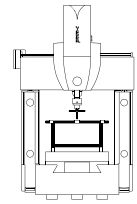
GANTRY CMMS



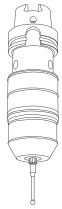
MULTISENSOR & OPTICAL SYSTEMS



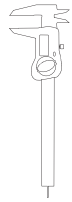
WHITE LIGHT SCANNERS



ULTRA HIGH ACCURACY CMMS



SENSORS



PRECISION MEASURING
INSTRUMENTS



SOFTWARE SOLUTIONS

HEXAGON
METROLOGY

Hexagon Metrology offers a comprehensive range of products and services for all industrial metrology applications in sectors such as automotive, aerospace, energy and medical. We support our customers with actionable measurement information along the complete life cycle of a product – from development and design to production, assembly and final inspection.

With more than 20 production facilities and 70 Precision Centers for service and demonstrations, and a network of over 100 distribution partners on five continents, we empower our customers to fully control their manufacturing processes, enhancing the quality of products and increasing efficiency in manufacturing plants around the world.

For more information, visit **www.hexagonmetrology.com**

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